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ABSTRACT

In this paper, research about mediated communication is used to shed light on questions that have arisen in relation to behavioral telehealth about the relative merits of different modes of distance communication for the transaction of behavioral telehealth services. The paper is in two parts. The first part contains a presentation of questions and issues about mediated communication that have been posed by behavioral telehealth researchers. In the second part, research about mediated communication from the fields of information science; group communication; social psychology; human-computer interaction; applied communication research; computer-mediated communication; business management; special education; and telephone communication is used to clarify the questions and issues presented in part one. (Contains 53 references) (Author/ADT)

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Interpersonal Communication in Behavioral Telehealth: What Can We Learn from Other Fields?

by

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Chapter Eighteen

Interpersonal Communication in Behavioral Telehealth: What Can We Learn from Other Fields?

Katharine R. Collie

In this paper, research about mediated communication is used to shed light on questions that have arisen in relation to behavioral telehealth about the relative merits of different modes of distance communication for the transaction of behavioral telehealth services. The paper is in two parts. The first part contains a presentation of questions and issues about mediated communication that have been posed by behavioral telehealth researchers. In the second part, research about mediated communication from the fields of information science, group communication, social psychology, human-computer interaction, applied communication research, computer-mediated communication, business management, special education, and telephone communication is used to clarify these questions and issues.

Interpersonal Communication in Behavioral Telehealth

Definitions

Telehealth, the use of communications and information technologies to deliver physical and mental health services and transmit health information over long and short distances, is currently being seen as a way to increase equality of access to health care by eliminating barriers of distance, time, geography, and cost to people who require specialized care. Behavioral telehealth refers to telehealth services designed for the provision of mental health care.

Telehealth is in ascendancy at present, but it is not a new phenomenon. Telecommunications technologies such as telephones and radios have been used to facilitate health care from a distance for many decades (Carvings, 1984). Recently, however, the advent of the Internet and the general expansion in North America of the telecommunications infrastructure has sparked a renewed interest in telehealth (Lugg, 1998). Advanced technologies such as high-bandwidth lines, satellites, and powerful computers are now being used for distance delivery of health care services,

for transfer of health information, and for consultations among clinicians in different locations. Preliminary studies of distance mental health programs that have employed advanced technologies-and that have focused primarily on full-speed, two-way videoconferencing-have shown promising results for expanding access to services (e.g., Doze, Simpson, Hailey & Jacobs, 1999; Mannion, L., Fahy, T. J., Duffy, C., Broderick, M., & Gethins, E., 1998; Mielonen, Ohinmaa, Moring & Isohanni, 1998). However, it is not clear that high-tech telehealth can be cost-effective (Brown, 1995; Lugg, 1998). Videoconferencing requires the capture and transmission of full-speed moving images and therefore requires more complex equipment and much greater transmission capacities than audio-only (e.g., telephone) or text-only (e.g., e-mail) communication. Thus, the introduction of expensive technologies works against the goal of widening access to health care and making more equitable use of available resources. The lack of clear evidence of the cost effectiveness of high-tech telehealth programs has caused some telehealth researchers to advocate the use of less technologically complex methods of telehealth delivery (Della Mea, 1999; Elford, 1998; Grigsby & Sanders, 1998). However, the general trend in telehealth continues to be in the direction of videoconferencing and ever more sophisticated technology. In the second part of the paper evidence is presented that challenges the assumption that video communication is necessarily superior to other forms of distance communication and explanations for a persistent preference for videoconferencing in spite of this evidence are considered.

Issues in Behavioral Telehealth

The recent expansion of telehealth has elicited both enthusiasm and trepidation. Proponents see it as a way to overcome barriers to access, to bring down health care costs, to increase availability of health-related information, and to make health care more available to groups that historically have been underserved such as the elderly, people in rural and remote regions, and people with mobility constraints. However, this enthusiasm is not universally shared. Among mental health professionals, reservations about telehealth have focused on two issues: (a) confidentiality and (b) the quality of mediated therapeutic interaction.

Confidentiality. Information and interpersonal communications that are transmitted via telecommunications technologies such as telephones, fax machines, e-mail, or videoconferencing are considered more vulnerable to interceptions and breaches of confidentiality than information and communications that are exchanged directly without technological mediation (Bloom, 1998; Childress, 1998; Powell, 1998; Sampson, Kolodinsky, & Greeno, 1997; Seeman & Seeman, 1999; Sussman, 1998).

The difference may have more to do with the existence of laws and ethical guidelines that have been created to protect the confidentiality of traditional forms of communication than with inherent differences between mediated and non-mediated communication, and it may be that as new laws and guidelines are put into place the difference will disappear. However, for the present, confidentiality is a grave concern.

Mediated communication. Highly personal, direct communication has traditionally been seen as a key ingredient of many types of mental health treatment (counseling, psychotherapy, etc.) and there is a general expectation that health care services will be very individualized and personal (Birch, Rigby, & Roberts, 2000). The idea that a therapy session or a psychiatric consultation could happen between people who are not in the same place goes against fundamental assumptions about mental health treatment and about the role of shared physical presence and face-to-face contact. Consequently mediated forms of communication can easily be dismissed as inappropriate for the provision of mental health care.

Behavioral telehealth researchers have done a lot to counter the skepticism about using mediated communication for mental health care and have tried to demonstrate both theoretically and empirically that a lack of shared physical presence and of face-to-face contact are not insurmountable obstacles. In 1997, Sampson, Kolodinsky, and Greeno published a hypothetical analysis of the potentials and pitfalls of telecounseling that illuminated the possibilities of the Internet and other technologies for counseling, psychoeducation and counseling supervision. This analysis created a foundation for subsequent efforts (e.g., Laszlo, Esterman, and Zabko, 1999) to understand the advantages and disadvantages of delivering mental health care from a distance using various telecommunication technologies (e-mail, videoconferencing, etc.) and to envision ways to conduct behavioral telehealth successfully. These efforts have included identifying ethical issues pertaining to behavioral telehealth (e.g., Seeman and Seeman, 1999) and the development of ethical guidelines (e.g., Bloom, 1998).

Researchers interested in modes of communication for behavioral telehealth other than videoconferencing have been trying to determine if/ how counseling or therapy sessions can be conducted using media that provide no visual contact with the other person. There is wide agreement that a lack of visual cues is a significant consideration, however, there are differing opinions about the effects of a lack of visual contact. Some behavioral telehealth practitioners and researchers have noted that a lack of visual information can make it hard to understand nuanced communication (Laszlo et al., 1999), conduct online groups (Colòn, 1999),

and make certain kinds of diagnoses (Childress, 1998; Murphy & Mitchell, 1998). Others maintain that it is possible to compensate verbally for the missing visual information, and argue that if clinical approaches are adapted to the telehealth medium, mediated sessions can be just as successful or more successful than face-to-face sessions (Curran & Church, 1999; Murphy & Mitchell, 1998). In has been suggested that in the absence of visual contact, there can be a feeling of freedom from the clinician's judgmental gaze that is disinhibiting and favors self-disclosure (Childress, 1998; Curran & Church, 1999; King & Moreggi, 1998; Laszlo et al., 1999; Powell, 1998; Sampson et al., 1997). Related to this is the idea that this protection from visual judgment could reduce intimidation and reluctance to seek professional help (Childress, 1998; Doze et al., 1999; Sussman, 1998). Additionally, it has been proposed that it may be easier for a client to focus on the task at hand when there are fewer visual distractions and when there is less concern about social appearances (Colòn, 1999). It is important to point out that disadvantages of no visual contact that have been noted are disadvantages from the clinician's point of view (e.g., difficulty in making a diagnosis) and that potential advantages have been described in terms of benefits to the client (e.g., protection from a judgmental gaze).

Explorations of the pros and cons of various modes of communication for behavioral telehealth have highlighted subtle differences between different forms of mediated communication, and have shown that it is not simply a matter of comparing face-to-face and distance communication. Text-only communication such as e-mail has different qualities than telephone communication even though neither one provides visual cues; videoconferencing is different from teleconferencing; synchronous (real-time) communication such as speech communication via telephone has different qualities than asynchronous (delayed) communication such as e-mail, and so on. Given the well-recognized importance of non-verbal cues to interpersonal communication, it is tempting to categorize modes of communication according to whether or not there is visual contact that allows the communicating parties to see each other's non-verbal expressions. On this basis, face-to-face communication and videoconferencing would be seen as equivalent, and modes of communication such as e-mail, telephoning, writing, etc. that do not allow for visual contact would be seen as equivalent. Clearly, there are problems with this categorization. One is that not all non-verbal conversational cues are visual. Speech contains a rich array of non-verbal information in the form of inflection, tone of voice, pauses, etc. (Haas, Benedict & Kobos, 1996; Hines, 1994; Lago, 1996). Text-only communication also contains non-verbal information, and can contain more than is usual if an effort is made to provide it (Murphy &

Mitchell, 1998). Another problem is that direct face-to-face contact does more than provide access to non-verbal cues. Shared physical presence can provide things such as a feeling of safety, support, and motivation that may be unrelated to visual cues (Graetz et al., 1998). Although there may be ways to compensate verbally for the lack of visual communication information-there is no question as to whether blind people can successfully offer or receive mental health services (Hines, 1994)-the question about whether shared physical presence is essential is more difficult to answer (Barak, 1999; Doze et al., 1999; Lago, 1996; Sampson et al., 1997). In the second part of the paper differences between modes of communication are explored in greater detail.

Behavioral Telehealth Research

Research about behavioral telehealth is sparse and is considered to be lagging behind developments that have been occurring in practice. However, there have been some empirical studies, as well as numerous case reports about telehealth pilot projects, that provide concrete evidence to back up the claim that behavioral telehealth is a viable concept in spite of the lack of direct contact. Pilot studies have been conducted to determine whether mediated communication can be as effective as in-person communication for psychiatric consultations (e.g., Ball, McLaren, Summerfield, Lipsedge & Watson, 1995; Yellowlees & Kennedy, 1996; Zaylor, 1999), brief psychotherapy (Day & Schneider, 2000; Schneider, 1999), and counseling for anxiety (Cohen & Kerr, 1998). These preliminary studies have not shown deleterious effects of mediation or lack of proximity. Surprisingly, they have not shown significant differences between, audio, video, and in-person modes of communication on measures such as relationship formation, therapeutic outcomes, and client satisfaction. Neither have they shown that more complex technologies are better suited to behavioral telehealth than simpler technologies. The potential for successful provision of distance mental health services has been claimed more or less equally for telephones, videophones, and all forms of videoconferencing, although people reporting on telephone and online services have been able to make the strongest claims about being able to reach people who, without these service options, would not be using the health care system at all (e.g., Zhu, Tedeschi, Anderson & Pierce, 1996).

Research from Other Fields

The research studies discussed in this part of the paper are explorations of different forms of mediated communication, a term that refers to person-

to-person interaction in which a technology is interposed and is integral to the communication (Cathcart & Gumpert, 1990). Mediated communication can either be synchronous, which is to say without a time delay, or a synchronous, which is to say with a delay between the time a message is transmitted and the time it is received. Examples of synchronous mediated communication are telephone conversations, CB radio exchanges, computer chat conversations, and communication by computer decision support systems. Asynchronous forms of mediated communication include e-mail, letters, and audio and video recordings. The primary focus of the following discussion is synchronous mediated communication, with some attention given to asynchronous (text-only) computer-mediated communication.

The discussion is organized around the following two questions: (a) Why have behavioral telehealth researchers found so little measurable difference between face-to-face, audio, text-only, and video communication? (b) Why is there a tendency for behavioral telehealth developers to favor video communication?

The research discussed here is in the form of experiments, literature reviews, and meta-analyses, drawn from a range of disciplines. Most of it tests and/or challenges the following assumptions about mediated communication:

1. Mediated communication is "rest[illegible]d" compared to face-to-face communication and therefore inferior (e.g., Chapanis, Ochsman, Parrish & Weeks, 1972).
2. Visual signals are a necessary aspect of interpersonal communication.
3. Effects on communication due to the medium are constant over time.
4. Forms of communication that have fewer "channels" of communication (e.g., verbal, visual, aural, gestural) will favor greater task focus and will minimize socioemotional communication and therefore the development of relational ties (e.g., Sproull & Kiesler, 1996).
5. Forms of communication that are "richer" (i.e., that have more channels, that allow more senses to be utilized, that provide immediacy and feedback, and that have the capacity for natural language) feel warmer and more personal and therefore are preferred.

Looking for Differences Between Modes of Communication

The question of whether and how interpersonal communication is affected by the communication medium that is being used has been a source

of research interest for some time. In general, researchers have found smaller media effects than predicted, and the differences between communication media that have been found have not fallen in line with prevailing assumptions about mediated communication (see above). Overall, the research does not support the assumption that face-to-face communication is always superior to mediated communication, nor that visual cues are essential to interpersonal communication.

In two early studies in which four modes of interactive communication (typewriting, handwriting, voice-only, and face-to-face) were compared for problem-solving tasks, Chapanis et al. (1972, 1977) found only minor differences across modes, and differences that were found contradicted assumptions about the benefits of multiple channels of communication. For example, Chapanis et al. predicted that when people are not able to see each other and therefore are not able to use gestures as well as words to communicate, they would need to use more words to accomplish their tasks, because things that normally would be expressed non-verbally would need to be put into words. Instead, fewer words were used and the tasks were completed just as quickly. The fact that the ability to use gestures did not automatically reduce the number of words that was used nor improve the effectiveness of the communication called into question the role of visual signals in speech communication and showed that more research was needed about the relationship of verbal and non-verbal communication. Similarly, an early meta-analysis of experimental comparisons of face-to-face and mediated communication (Williams, 1977) revealed that although clear differences between written and spoken communication had been measured, studies conducted up to that point had not shown clear differences in speed and effectiveness between face-to-face and synchronous mediated communication. On the whole, audio-only had been found to be faster than face-to-face communication and just as effective as both face-to-face and video communication.

More recent studies have yielded similar results. For example, in a laboratory study with 54 undergraduate students in which three modes of communication (face-to-face, teleconferencing, and computer messaging) were compared to see how the mode of communication would affect therapeutic interactions, Szeli (1995) found that participants rated all three modes equally for informality and ease of communication, contradicting the assumption that mediated communication is more formal and less personal. In a study comparing these same three modes of communication for group information sharing tasks, Graetz, Boyle, Kimble, Thompson, & Garloch (1998) found teleconferencing and face-to-face communication to be equivalent for accuracy of speed of task completion (computer messaging

was slower because of typing time), and that people in the teleconferencing groups had the most favorable impressions of their groups.

Doherty-Sneddon, Anderson, O'Malley, Langton, Garrod, & Bruce (1997) also found no significant differences between face-to-face, audio, and video communication on measures of task performance on tasks for which benefits of face-to-face had been demonstrated in previous studies. In contrast to Chapanis (1972, 1977), however, they found that more words were used when visual contact was missing, particularly for the purpose of checking for understanding. Their study showed how verbal communication can be substituted for visual communication when there is no visual contact. One of their conclusions was that people are flexible communicators, using either verbal or visual strategies as permitted to achieve the same dialogue functions. In this study, the communication process was explored as well as communication outcomes. One of the conditions created for the study was high quality videoconferencing that allowed the people communicating to see each other's eye movements as well as other fine-grained details of facial expressions that are usually not visible during video communication. This condition produced results that provided important insights into the nature of video communication. When people could see each other's eyes, they spent more time looking at each other than when eye movements were not visible, and they looked at each other at times when it would be expected based on behavior during face-to-face communication, for example, when it was time to check for understanding. However, the fact that people could see each other's eye movements, and looked at each other's eyes at times when confirmation of understanding was being sought, did not keep people from simultaneously using verbal strategies for this dialogue function. They used the kinds of verbal strategies that were used in conditions that did not provide eye contact and were not used in the direct face-to-face condition. The fact that they were using these verbal strategies did not keep them from looking at each other's eyes as if to communicate visually. The researchers called this over-gazing and speculated that people seemed to think that they would be able to use visual signals in the same way as in face-to-face communication and attempted to do this, but were not able to. The visual signals did not seem to bring the same benefits as in face-to-face. In particular, they did not seem to facilitate listener understanding in the same way. This suggests that even when videoconferencing provides all the visual information that would be available during direct face-to-face communication, it is not equivalent. Rather, there may be subtle limitations to video communication that could explain why it does not automatically outshine other, less rich, modes of mediated communication.

Walther (1996) has argued that it is wrong to assume that the medium of communication produces specific effects and determines the quality of the communication, or that effects associated with the medium will remain constant. Walther, Anderson, and Park (1994) conducted a meta-analysis of research about social interaction and interpersonal communication in the context of text-only computer-mediated communication that significantly challenged these two assumptions. They tested the idea that computer-mediated communication is inherently impersonal (task-oriented) as compared to face-to-face communication and that it necessarily constrains socially oriented communication. They found that although researchers had identified these effects, they only appeared in studies in which novices used computer-mediated communication systems in artificial time-restricted situations. In studies in which time was not constricted, these particular effects did not appear. Effects such as task-orientation that were observed in studies in which people used a new medium just once were not observed in studies in which people had already been using the medium. Walther relates this to his Social Information Processing theory, which holds that people using any communication medium experience similar needs for uncertainty reduction and affinity, and in mediated modes of communication will adapt their ways of communicating over time to favor "the solicitation and presentation of socially revealing, relational behavior" (p. 465) in order to meet these needs without letting the communication medium stand in the way.

The claim that any differences in the personal and social dimensions of face-to-face and mediated communication are differences in rate, not differences in inherent qualities of the communication modes was supported by a subsequent study conducted by Chidambaram (1996), who investigated ways in which attitudes and task outcomes change over time for people using text-only computer decision support systems anonymously and ways intragroup relational links form for people using this kind of mediated communication. The study was designed to specifically test two ideas: (a) that the use of computer support systems minimizes socio-emotional interaction and (b) that the effects of a communication medium are constant over time. Twenty-eight five-member groups, half using a computer support system, half communicating face-to-face, met four times over four weeks for 90 minutes each time to do business-related decision making tasks. After each session, self-report questionnaires were used to measure "cohesiveness," "perceptions of process," and "satisfaction with outcome." The results showed that by the end of the four weeks, levels of relational intimacy for the people using mediated communication were equivalent to the levels for the face-to-face groups, and that the degree to which people

felt restricted by the mediated mode of communication decreased significantly with time. This study provided additional evidence that restriction imposed by single-channel (text-only) communication is not enough to block socio-emotional communication and the formation of relational ties.

Advantages of Mediated Communication

One thing that may help explain the lack of measurable superiority of face-to-face communication over other mediated modes is that there may be advantages as well as disadvantages to not being able to see and be seen by the other person and to not having in-person contact. Potential advantages that have been identified focus on visual cues and protection from judgment.

Various researchers have shown that people feel less vulnerable and freer to speak when they cannot be seen (e.g., Fish, 1990; Graetz et al., 1998; Weinberg, 1996). In a quasi-experiment designed to determine whether computer-mediated communication (synchronous computer chat) can provide the same type of supportive atmosphere as face-to-face communication, Weinberg (1996) found no significant differences between the two modes on measures of "supportiveness" and "helpfulness," but did find differences on measures of "callousness" in that people in face-to-face conditions rated themselves as more guarded and careful than people in the computer chat condition, and rated their communication partners as more judgmental. Similarly, in a laboratory experiment in which 37 groups of undergraduate students were given an information sharing task to complete in one of three modes of communication-face-to-face, teleconferencing, and synchronous computer chat-Graetz et al. (1998) found that people in the telephone groups expressed the highest levels of cohesion ("people expressing the same ideas") and the lowest levels of inhibition ("keeping one's own ideas private"). In a study designed to determine differences in individual influence and decision making quality in three communication modes-face-to-face, teleconferencing, and computer chat-Citera (1998) found that less dominating people were more able to influence decisions when communicating by telephone or computer.

In a series of experiments comparing the ways groups make decisions using computer conferences, e-mail, or face-to-face discussions, Sproull and Keisler (1996) found that people using text-only computer-mediated communication expressed themselves more frankly and had interactions that were not dominated by one or two people as is common in face-to-face discussions. Sproull and Keisler suggest that in situations in which social cues are absent or weak, people can stop worrying about how other people are evaluating them and therefore can devote less time and effort to posturing

and social niceties, with the result that they will be more open and honest. According to Sproull and Keisler (1996) and to Walther (1996), when it is not necessary to monitor the other person's visual and social cues, attention can be freed up for focusing on the communication tasks at hand. Weinberg (1996) also found that the absence of distracting visual cues had an enhancing effect on the mediated communication in her study of supportiveness and mediated communication.

Walther (1996) coined the term hyperpersonal communication to describe mediated communication that surpasses face-to-face communication in its ability to enhance social and emotional interpersonal communication. He offers a number of reasons why even text-only communication is sometimes more intimate and socially oriented than face-to-face communication. These include: (a) idealization, which is to say the tendency for people to inflate their perceptions of people they do not see, using the few social cues they have to create a positive image of the person with whom they are communicating; (b) the possibly for people to optimize their self-presentations by being selective about what they will and will not reveal, especially early on; (c) the fact that more attention can be devoted to the specifics of the communication when attention is not being used for handling the intricacies of a face-to-face social interaction; and (d) the possibility of what he calls an intensification loop of positive reciprocation, whereby people who are addressed as if they are attractive and socially desirable (because of being invisible) will tend to behave that way.

Still a Preference for Videoconferencing

Industry pressure. It is beyond the scope of this chapter to analyze the role of high-tech telecommunications companies in influencing the direction of telehealth development. However, this influence needs to be mentioned. There is a great deal of money to be made by selling expensive telecommunications equipment to hospitals and other health care customers and therefore there is an incentive for telecommunications companies to sponsor telehealth initiatives that involve high-tech equipment. There is much less incentive to sponsor telehealth initiatives that involve already existing technologies such as telephones. This in itself constitutes a powerful influence on the field of telehealth and an explanation for the trend toward high-speed two-way videoconferencing rather than less expensive options.

Familiarity and assumed superiority. It is widely assumed that interpersonal communication that includes visual contact is superior to communication that doesn't include visual contact, and therefore that videoconferencing is superior to text or audio modes that do not provide a view of the other person. A general preference for richer media (that have a

greater number of cue systems, immediacy of feedback, capacity for natural language, and more senses utilized) could account for the tendency to favor videoconferencing for behavioral telehealth, regardless of the effects it has on communication.

Disinhibition and indirect communication. The research just discussed challenges the assumption that visual contact is always helpful and supports the idea that people may feel more freedom to express themselves when they cannot be seen by or see the other person. If mediated forms of communication do provide a feeling of protection from judgment and do foster disinhibition, this could have special relevance for people who feel vulnerable or who are shy. The possibility of using mediated communication to facilitate interpersonal expression for these people could have important ramifications for counseling and psychotherapy. However, there may be factors that keep this positive potential from being fully embraced, in particular, the tendency in contemporary mainstream Western culture to take a negative view of a reluctance to speak directly.

Adjustment time. Adjustment time is another factor that could help explain the preference for videoconferencing. Research has shown that with time people using even single channel forms of mediated communication can attain levels of personal communication, affiliation, and relationship development that are similar to or better than with face-to-face communication. However, someone beginning to use a new mode of mediated communication may have no way of sensing that this will happen, and may evaluate the communication mode according to how it feels initially.

The invisibility of telephones. There may be a variety of cultural tendencies that uphold a preference for direct face-to-face communication and hence for videoconferencing. This preference may be more theoretical than actual, however, and may not carry over into people's behaviors and day-to-day choices. Telephones, and more recently, e-mail, are used very freely. Although e-mail may be seen as a way to shield oneself, this does not seem to be the case for telephones, which have been enormously popular for a long period of time. Videophones on the other hand (which would allow people to see a video image of the person they are telephoning) were introduced in the 1960s but have never been successful (Edigo, 1990).

In studies comparing face-to-face and video communication, audio-only communication is often included as a point of comparison. Typically, speech communication emerges as being equally as effective as face-to-face and video communication (see above). But this does not necessarily lead researchers to the conclusion that telephones should or could be used for the purpose being studied (e.g., Day & Schneider, 2000). Considering that telephones are already in place and are relatively inexpensive to operate,

it is surprising that the apparent strengths of speech communication are not given more prominence.

Communication researchers have noted that telephones have been a subject of scholarly neglect and that they remain transparent and invisible even though interest in mediated communication is high (Fish, 1990; Westmyer, DiCioccio & Rubin, 1998). The research reviewed for this paper offers no explanation for this. However, various explanations can be imagined. In the following paragraphs, three possibilities are explored.

According to Fish (1990) the feeling of privacy and protection from a judgmental gaze that is afforded by telephones is enhanced by the intimacy that comes from the way telephones are used. The telephone receiver is held in a zone of intimacy that surrounds the face, in particular the lips and the ear. Senses other than sight (touch, hearing, smell) are important in zones of intimacy, which may explain why people feel comfortable without visual contact when they are communicating by telephone (Cathcart & Gumpert, 1990). According to Fish, this feeling of intimacy can minimize feelings of exposure and vulnerability and help people to disclose and to be more probing with their verbal interaction. However, this sense of intimacy may work against a general perception that the telephone can be a tool for important work in the business and health care domains.

In addition to the assumption that visuals are essential to speech communication, there seems to be an assumption that more complex technologies are better at mediating distance communication than simpler technologies. Telephones give the impression of being simple and may have fallen out of the technology spotlight for this reason.

Mediated communication has both a technological and a human dimension. The human dimension that is comprised of such things as communication skills, organization, and coordination of the tasks tends to be invisible, even though it may be more essential to the success of the work than the technological dimension (Robertson, 1997; Stamm, 1998; Yellowlees & Kennedy, 1996). The technological dimension typically garners most of the attention. Robertson has argued that the reason the human skills involved in mediated communication get overlooked is that they are types of skills that have traditionally been in the domain of women's work, which often is unpaid and culturally invisible. If telephones appear to have a much greater human dimension than a technological dimension, and if the human dimension has the characteristics of women's work, this could cause telephones to be relatively invisible in telecommunications discourse.

Limitations

In the preceding section, possible explanations for a persistent preference for videoconferencing in spite of the lack of empirical evidence to support this preference have been explored. Some limitations of the research that supports these possible explanations need to be mentioned. A limited number of research studies were reviewed for this paper, and the studies were drawn from a range of disciplinary domains. The aggregate value of the research is somewhat limited by its diversity because of differences in methodologies, measures, and assumptions. Only a few dimensions can be investigated in each study. It may be that video communication is indeed superior on dimensions that are important to behavioral telehealth but that have not yet been investigated.

Most of the comparisons of different modes of communication were conducted in artificial settings, often with students. In real-life settings there would be many more social and contextual variables to consider (Er & Ng, 1995; Kline & McGrath, 1999) such that research conducted in these settings might produce a very different picture.

A further limitation to this discussion is that issues of age, culture, and gender were not considered in the research that was reviewed. It is well known that all three of these factors can have a profound influence on communication preferences and patterns. An analysis that took these factors into account is probably needed in order to arrive at a clear understanding of differences between mediated and non-mediated communication. Another factor that was not considered was geographical separation. Preliminary research has shown that mediated communication is affected by perceptions of how far away the other person is. In a laboratory simulation, Moon (1998) found that dishonesty increased with perceived distance, and that the likelihood of being persuaded decreased. It is easy to assume that mediation eliminates distance as a factor, but this may not be the case.

Conclusion

The research discussed in the second part of this paper does not provide definitive answers to the two questions that guided the analysis (Why have behavioral telehealth researchers found so little measurable difference between face-to-face, audio, text-only, and video communication? Why is there a tendency for behavioral telehealth developers to favor video communication?), but it does provide some clues and some ideas that could be helpful to behavioral telehealth developers. The research discussed here indicates that the five assumptions about mediated communication listed

at the beginning of the second part should not be taken as fixed truths. It appears that people are able to adapt to different modes of communication, especially over time, without the mode of communication dictating absolutely what will and will not be possible. There may be advantages as well as disadvantages to mediated forms of communication that could be capitalized on for specific purposes.

Given these two ideas, that people are flexible communicators and that modes of mediated communication may have advantages as well as disadvantages, a possible avenue for behavioral telehealth developers is one that maximizes the flexibility and choice of communication mode. For example, a videoconferencing service could include the possibility of audio-only teleconferencing for some situations.

If indeed people are flexible communicators who can adapt well to various modes of communication-the popularity of cellphones strongly supports this view-then an argument can be made for using modes of communication for telehealth that will do the most to promote increased access to services, namely inexpensive modes and/or technologies that are already in place, such as telephones. There is wide agreement that telehealth has the potential to make mental health services more available to people who have been underserved, and that it is necessary now more than ever to make changes within the health care system that will promote both cost reductions and equality of access. An important paradox exists, however. In many cases, it is the people who have easy access to health care services who also have access to advanced telecommunications technologies (computers, high-speed lines, videoconferencing facilities)-by virtue of living in major urban areas. Many of the people in the groups that have been underserved probably do not have access to advanced telecommunications technologies in their homes or in their communities. Stamm (1998) makes the point that if the goal of increased equality of access is to be reached, telehealth standards should not be based on the high infrastructure urban areas, as this could work to prevent services from reaching low infrastructure urban areas where telehealth may hold the most promise.

As behavioral telehealth research accumulates, it is becoming clear that the type of technology that is used is probably less of a factor in determining the success of the communication and of the particular telehealth service than the ways in which the technology is used (Stamm, 1998; Yellowlees & Kennedy, 1996). The lack of evidence of distinct differences between modes of communication is congruent with this perspective and lends credence to the idea that it is important in behavioral telehealth to make the most of whatever form of communication is being

used by giving attention to the human side of the communication (e.g., providing training in mediated communication), rather than letting all the attention go to the technology that is allowing the communication to occur, as can so easily happen.

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